REMARKS

Claim 1, previously amended solely to incorporate the subject matter of claim 2, is canceled and replaced by new claim 23. Claims 3 and 4 are amended to depend on claim 23 and new claims 24-28 are added to round out the protection to which applicants are entitled. Claims 3-28 are pending in the application.

In the Office Action, at paragraph numbered 2, the Examiner objected to the title and proposed a new title. The tile has been amended as proposed by the Examiner.

At paragraph numbered 3, the Examiner indicated continued confusion over the wording of the paragraph on page 28, beginning at line 5. In response, Applicants have re-amended this paragraph to make it clear that the separate slits 116 and 117 are arranged in a peripheral portion outside of the image area.

At paragraph 4 of the Office Action, the Examiner noted that claim 13 is a duplicate of claim 11 and suggested that it be amended to depend on claim 12. Claim 13 is amended as the Examiner suggested.

In paragraph 6, the Examiner rejected claims 5, 7, 12 and 6, 8, 9, 13, 18, and 19, as being indefinite under 35 U.S.C. § 112, second paragraph. In particular, the Examiner objected primarily to the recitation in the terminal clause in each of independent claims 5, 7, and 12. The clause in question is amended to make it clear that the separation slits are in a peripheral area outside of the image area and in which the light-cutting film is superposed with the sealing member. Applicants submit that the amendment obviates the grounds for the rejection and that this § 112 rejection of claims 5, 7, 12 and 6, 8, 9, 13, 18, and 19 should be withdrawn.

In paragraph 7 of the Office action, the Examiner rejected claims 10, 11, 18, and 19, under 35 U.S.C. § 112, second paragraph. The Examiner objected to the second

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recitation of a plurality of transparent electrodes further provided on insulating film, both from the standpoint of whether they differ from the first and second transparent electrodes and whether they are on or under the insulating film.

The terminal clause of claim 10 is amended to identify the questioned electrodes as being at least one of the first and second transparent electrodes, and the insulating film as being layered with the light-cutting film. The terminal clause also recites that the at least one of the first and second transparent electrodes is provided on a surface of the insulating film.

It is noted that the transparent electrodes may be "on" the insulating film, as shown in Figs. 12(b) and 15, where the electrode 102 is on the top surface of the insulating film 106. Alternatively, and as shown in Fig. 13, the electrode 102 may be "under" the insulating film. In Fig. 13, the electrode 102(f) is shown on the bottom surface of the insulating film 106.

Claim 10, as amended, is generic to both of the identified embodiments. Claims 24 and 25 are added to be specific to the respective alternative embodiments.

Since claim 10 clearly defines the embodiments illustrated in Figs. 12(b), 13, and 15, for example, the rejection under 35 U.S.C. § 112 should be withdrawn to the extent it is deemed applicable to claims 10, 11, 18, 19, 24 and 25.

In paragraph 8 of the office action, the Examiner rejected claims 1 (originally claim 2 and now claim 23), 3, 4, 12-19, and 22 under 35 U.S.C. § 112, second paragraph, because of alleged confusion over "non-pixel" and "non-image" electrodes. In response, the claims have been amended to identify the non-pixel or non-image electrodes as drive lead electrodes, and the transparent electrodes as imaging

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electrodes. As a result, claims 3, 4, 12-19, 22, and 23 comply with the requirements of 35 U.S.C. § 112, second paragraph, and the rejection of those claims under this section should be withdrawn.

Applicants gratefully acknowledge the Examiner's indication that claims 7-11 and 14-17 would be allowable if amended to overcome the rejections under 35 U.S.C. 112. In light of the amendments made herein, the § 112 rejection is no longer applicable and these claims should be allowable.

The Examiner rejected claims 1 (now claim 23), 3, 4, and 22 under 35 U.S.C. § 102(a) as being anticipated by Sato et al. (Japanese Published Application No. 06-051332A) in paragraph 10 of the Office Action; rejected claims 5 and 6 under 35 U.S.C. § 102(e) as being anticipated by Shimada et al. (U.S. Patent No. 6,268,895) in paragraph 11; and rejected claims 12, 13, 18 and 19, under 35 U.S.C. § 103(a) as being obvious in light of Sato et al, as applied to claim 1, and further in view of Shimada et al. in paragraph 13.

Regarding the rejection in paragraph 10 of the Office Action, attached is a full English translation of the Sato et al. reference in order to clarify the difference in structure between the claimed invention and Sato et al. Briefly, in the present invention, the slit is provided across the elongated electrode in order to avoid short-circuit between the dummy electrode and the transparent electrode. As a result, it is possible to eliminate unevenness of color on the screen. On the other hand, in Sato et al., only the dummy electrode is provided, and the slit is not provided on the electrode. The dummy electrode is used to avoid unevenness of color, due to the gap being not uniformed between upper and lower substrates.

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In the present invention, the slit is used for cutting leakage of the current between the dummy electrode and the lead electrode. If only dummy electrode is provided, unevenness of color occurs on a screen. In the present invention, it is possible to obtain clarified display without unevenness of color by providing the slit.

Since the dummy electrode in Sato et al. is not divided by slits, the reference cannot anticipate claims 3, 4, 22 or 23 under 35 U.S.C. § 102(a) and for that reason the rejection should be withdrawn.

Regarding the rejection of claims 5 and 6 under 35 U.S.C. § 102(e) as being anticipated by Shimada et al., claim 5 recites, for example, that the separation slits for dividing the light-cutting film into a plurality of portions are provided in a peripheral area outside of the image area and in which the light-cutting film is superposed with the sealing member. In Fig. 11 of the drawings, the slits are designated by the reference numbers 116 and 117 and both are located the area delineated by double-dot chain lines and superimposed by the sealing member 105. This structure is further described at page 22, line 3 to page 23, line 1 of the specification.

Shimada et al. shows only a sealing resin 217 in Fig. 15 and does not in any way disclose the relationship of that resin to the interrupted light shielding region 220 shown only in Figs 12 and14. For that reason Shimada et al. cannot anticipate amended claim 5 nor claim 6, which depends upon claim 5.

Similarly, the rejection of 12, 13, 18 and 19, under 35 U.S.C. § 103(a) as being obvious in light of Sato et al, as applied to claim 1, and further in view of Shimada et al. is improper because any combination of these references fails to provide all of the components recited in the rejected claims. In particular, claims 12, 13, 18, and 19 recite

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that both the dummy electrode and the light-cutting film are divided by slits as shown, for example, in Fig. 18 and described in the paragraph bridging pages 30 and 31 of the specification. Since neither Sato et al, nor Shimada et al. disclose or suggest the recited structure, the combination of the two references does not make out a *prima facie* case of obviousness under 35 U.S.C. § 103. *See* M.P.E.P. § 2143.03.

The present invention, as defined by claims 26-28, prevents display quality from being deteriorated as a result of change in voltage applied to a liquid crystal and caused by an impedance change of a driving electrode when it comes into contact with a dummy electrode opposite to the drive electrode for forming an electric contact. For example, if a driving electrode comes into contact with a dummy electrode, the capacity of the resulting combined electrode increases, and therefore, the impedance of the combined electrode becomes larger than that portion of the driving electrode having no contact with a dummy electrode. In a case where a driving electrode comes into contact with a dummy electrode at two points, the serial resistance of the combined electrode decreases, thus decreasing the impedance.

Accordingly, the present invention, as defined by claims 26-28, divides the dummy electrode into a plurality of island portions, each of which is electrically insulated from the others. In this case, if a driving electrode comes into contact with an island portion of a dummy electrode, the change in capacitance and serial resistance of the combined electrode decreases without losing the primary function of the dummy electrode. As a result, the change in impedance decreases even if a driving electrode and an island portion of a dummy electrode comes into contact with each other.

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In contrast, in the disclosures of the cited references, a dummy electrode is provided opposite to a respective one of driving electrodes, and therefore, the change in impedance is larger than that of in the present invention when a dummy electrode and a driving electrode comes into contact with each other.

Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

If any extension of time under 37 C.F.R. § 1.136 is required for entry of this response, and not accounted for by an attached request and fee payment by check, please grant such extension and charge the required fee to our deposit account 06-0916.

Respectfully submitted,

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Dated: July 2, 2002

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Appendix to Amendment
U.S. Application No. 09/380,781
Filed: September 9, 1999

Amended Title

[LIQUID CRYSTAL DEVICE] LCD HAVING [LEAKAGE CURRENT PREVENTIVE FUNCTION] DUMMY ELECTRODES OR LIGHT-CUTTING FILM WITH CURRENT LEAKAGE PREVENTING SLITS

Amended Paragraphs in Specification

Page 28 of the specification, the paragraph beginning on line 5 -

For the area of the liquid crystal elements, the light can be transmitted through only the area superposed with the window 109 provided to the light-cutting film 104, and these areas become the substantial image areas. Since the separate slits 116 and 117 are arranged [to the] in a peripheral portion [apart from] outside of the image area, and since the width of the separation slit becomes 30 μm, the bad influence to the image quality due to the unnecessary light transmitting through these areas can be negligible. Accordingly, in this example, the transmission of the unnecessary light can be sufficiently obstructed, and it is possible to obtain the clear matrix-like image based on the image signal.

Amended Claims 3-5, 7, 10, 12-14, 16 and 22:

3. (Twice Amended) A liquid crystal apparatus with a leak current preventing function as claimed in claim [1] 23, wherein a width of each slit for dividing the dummy electrode is set to a value larger than a diameter of each of the conductive particles.

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4. (Twice Amended) A liquid crystal apparatus with leak current preventing function as claimed in claim [1] 23, wherein the dummy electrode is provided in parallel to and along a side of the sealing member.

5. (Amended) A liquid crystal apparatus with leak current preventing function, comprising:

first and second transparent substrates [provided] opposite to each other;

first and second transparent imaging electrodes [for image], each formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap; and

a conductive light-cutting film [provided to] on at least one of the first and second transparent substrates for cutting off unnecessary light at [the] an image area and peripheral portion thereof;

wherein separation slits for dividing the light-cutting film into a plurality of portions are provided [on an] in a peripheral area outside of the image area and in which the light-cutting film is superposed with the sealing member [and in the periphery of that area].

7. (Amended) A liquid crystal apparatus with leak current preventing function, comprising:

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first and second transparent substrates provided opposite to each other;

first and second transparent imaging electrodes [for image], each formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap; and

a conductive light-cutting film [provided to] on at least one of the first and second transparent substrates for cutting off unnecessary light at [the] an image area and peripheral portion thereof;

wherein separation slits for dividing the light-cutting film and the transparent electrodes for image into a plurality of portions are provided [on an] in a peripheral area outside of the image area, [in which] the light-cutting film [is] being superposed by the first and second transparent imaging electrodes [for image] and [superposed] with the sealing member [and] in the [periphery of that] peripheral area.

10. (Twice Amended) A liquid crystal apparatus with leak current preventing function, comprising:

first and second transparent substrates provided opposite to each other;

first and second transparent imaging electrodes [for image], each

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formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap; and

a conductive light-cutting film [provided to] associated with at least one of the first and second transparent substrates for cutting off unnecessary light at [the] an image area having a plurality of transparent electrodes [and peripheral portion of the image area];

wherein an insulating film is [provided on] layered with the light-cutting film and [a plurality of] at least one of the first and second transparent electrodes [are] is further provided on a surface of the insulating film, the light-cutting film has [the] a separation slit for dividing the light-cutting film into a plurality of portions at [the] a position slightly [inner] inward [position] from [the portion which is superposed with at least] the sealing member, and a further [the] separation slit is provided [to] in the light-cutting film for further dividing a part of the [separated] divided light-cutting film.

12. (Amended) A liquid crystal apparatus with leak current preventing function, comprising:

first and second transparent substrates provided opposite to each other;

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first and second [drive] imaging electrodes [for image], each formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap; and

a plurality of conductive particles included dispersedly within the sealing member;

a [non-pixel] drive lead electrode for the first and second imaging electrodes and formed at the position covered by the sealing member [of the first and second drive electrodes for image];

a dummy electrode formed [similar] opposite to at least a part of the [non-pixel] drive lead electrode, at the position in which the first and second transparent substrates are covered by the sealing member; and

a conductive light-cutting film [provided to] on at least one of the first and second transparent substrates for cutting off unnecessary light at [the] an image area and peripheral portion thereof;

wherein the dummy electrode is divided by a plurality of slits, and further, a separation slit for dividing the light-cutting film into a plurality of portions [at the portion] is provided in a peripheral area outside of the image area and in which the light-cutting film is superposed with the sealing member [and in the periphery of that area].

13. (Amended) A liquid crystal apparatus with leak current preventing

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function as claimed in claim [10] 12, wherein the width of the separation slit is three tenths (3/10) or less of the width of a wall of the sealing member.

14. (Amended) A liquid crystal apparatus with leak current preventing function, comprising:'

first and second transparent substrates provided opposite to each other;

first and second [drive] imaging electrodes [for image], each formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap;

a plurality of conductive particles included dispersedly within the sealing member;

a [non-pixel] drive electrode formed at the position covered by the sealing member of the first and second [drive] imaging electrodes [for image];

a dummy electrode formed [similar] opposite to at least a part of the [non-pixel] drive electrode, at the position in which the first and second transparent substrates are covered by the sealing member; and

a conductive light-cutting film provided to at least one of the first and second transparent substrates for cutting off unnecessary light at [the] an image area having a plurality of transparent electrodes and peripheral portion of the image area;

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wherein the dummy electrode is divided by a plurality of slits, [and further,] the light-cutting film and the first and second [drive] imaging electrodes [for image] are superposed, and a separation slit is provided for dividing the [laminated] superposed light-cutting film and the [drive electrode for image] imaging electrodes into a plurality of portions.

16. (Amended) A liquid crystal apparatus with leak current preventing function, comprising:

first and second transparent substrates provided opposite to each other;

first and second [drive] imaging electrodes [for image], each formed on an opposite inner surface of the first and second transparent substrates;

a sealing member [provided] between the first and second transparent substrates for providing a liquid crystal injecting area, for [and] forming a gap, and for [in order to seal] sealing the liquid crystal [therebetween] in the gap; and

a plurality of conductive particles included dispersedly within the sealing member;

a [non-pixel] drive electrode formed at the position covered by the sealing member of the first and second [drive] imaging electrodes [for image];

a dummy electrode formed opposite to the [non-pixel] drive electrode, at the position in which the first and second transparent substrates are covered by the sealing member; and

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a conductive light-cutting film [provided to] on at least one of the first and second transparent substrates for cutting off unnecessary light at the plurality of [drive] imaging electrodes, [for image, and the] an image area, and peripheral portion of the image area;

wherein the dummy electrode is divided by a plurality of slits, [and further,] the light-cutting film and the plurality of [drive] imaging electrodes [for image] are [formed by superposing through the] superposed with an insulating film, the plurality of [drive] imaging electrodes [for image] are insulated from each other, the light-cutting film has a separation slit for dividing the light-cutting film into a plurality of portions at [the little inner] a position [from at least the portion which is superposed with] inward of the sealing member, and a further[, a] separation slit is provided [to] in the light-cutting film for dividing a part of the [separated] divided light-cutting film.

22. (Amended) A liquid crystal device [having] comprising:

dummy electrodes [which are] opposite to [a drive] an imaging electrode [used for an image] and arranged along an elongated direction of a [non-image] drive electrode, the dummy electrodes being separated by a plurality of slits [in the direction] across the elongated direction, so that leakage current flowing in the dummy electrodes is cut off.

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